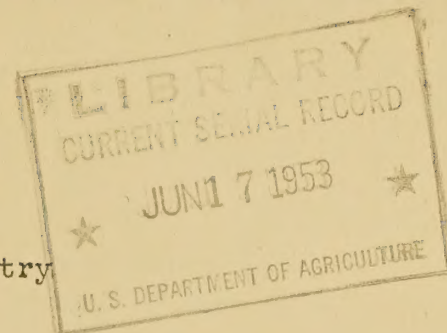


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U. S. Department of Agriculture  
Agricultural Research Administration  
Bureau of Agricultural and Industrial Chemistry  
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C.A.NO 20

LOOM ATTACHMENT FOR WEAVING HIGH-PICKAGE COTTON FABRICS

A new loom attachment developed at the Southern Regional Research Laboratory recently enables a standard textile loom to weave abnormally dense fabrics and also can be used to improve the appearance and strength of other fabrics.

Description

The new attachment is based on the principle of producing more "cover" on a fabric by having less tension on one shed layer than on the other as the lay beats up, thereby allowing the loom to insert more filling yarns per inch than could be achieved otherwise. By means of a push bar actuated from an auxiliary shaft driven from the loom cam shaft, the attachment applies tension first to one shed and then to the other during successive beatups of the filling. When released, this tension introduces considerable slackness to the shed layer and allows the filling thread to be beat-up either over or under the previous pick. On the next pick the slack shed becomes the tight shed and pulls the previous over- or under-riding pick into the plane of the fabric.

The attachment shown in drawings 8-C-1, 8-C-2, and 8-C-3 was built for use on a 1/2" Model X-P loom. Dimensional differences may necessitate slight modifications and minor structural revisions when the device is constructed for other looms. Heavier than normal reeds may be required when weaving fabrics of maximum density.

Operation

When placing the attachment in operation, idle gear No. 17 is locked into running position with the loom crank shaft set on front center, and with dobby crank No. 13 on auxiliary shaft No. 10 positioned to impart maximum up- or down-stroke to the push bar No. 8. It is essential that the shedding be timed so as to give a closed shed at each beatup. The combination of the closed shed and the maximum stroke of the attachment at each beatup imparts the desired tension to one bank of ends and the required slack to the other bank.

The push-bar No. 8 divides the warp into shed layers 22 and 23. On all plain type weaves, these two layers are the pattern sheds. Insertion of the push-bar between the shed layers should be done so as to give a slack shed under the filling on each beatup. The amount of stroke of the push-bar required for weaving any particular high-pickage fabric depends





on the elongation and other physical characteristics of the yarn used. This stroke is controlled by the eccentricity adjustment on the dobby cranks, No. 13.

### Results

Experience has shown that the maximum pickage obtainable with this attachment depends on the physical characteristics of the yarn and the construction of the fabric rather than on any mechanical limitation of the attachment or the loom. As much as a 33 percent increase over the maximum number of picks per inch obtainable without the attachment has been achieved. Laboratory tests reveal these high-pickage fabrics are highly resistant to the penetration of water and air. They may be used without chemical treatments in the manufacture of tarpaulins, awnings, tentage, raincoats and specialty products where heavy or densely woven materials are needed.

When used in weaving broadcloth, printcloth and light duck of normal density, the attachment results in improved appearance and greater strength. In the gray goods such fabrics appear more uniform, showing practically no reed marks, and are 3 to 10 percent stronger under standard breaking strength tests, than identical fabrics woven without the attachment.

Attachments - 8-C-1  
                  8-C-2  
                  8-C-3  
                  Bill of Materials





June 1, 1951

## BILL OF MATERIALS

SRRL High-Package Attachment

Part No.	Part Name	No. Required	Material	Amount
1	Bracket	1	L 5" x 3" x 1/2" x 5" Bar 3" x 1/2" x 5" Cap screws 1/2"-13 NC x 1" Steel Cut washers - 1/2" - Steel Lock washers - 1/2" - Steel Cap screws - 7/16" - 14 NC - Steel Cut washers - 7/16" - Steel Lock washers - 7/16" - Steel	1 1 2 2 2 2 2 2
2	Bracket	1	Same as Part No. 1	
3	Compensator Mount	2	Bar 3" x 1/2" x 8" Plate 9-3/8" x 4-1/2" x 1/2" HRS	1 1
4	Front Guide	2	1/2" x 1-1/2" x 5-1/2" Maple wood Cap screws - 1/4" - 20 NC - Steel Hex nuts - 1/4" - 20 NC - Steel	1 3 3
5	Back Guide	2	1/2" x 1-1/2" x 5-1/2" Maple wood Cap screws - 1/4" - 20 NC - Steel Hex nuts - 1/4" - 20 NC - Steel	1 3 3
6	Idle Gear Bracket Spacer	1	Plate 4-5/16" x 4" x 1/2" HRS Cap screws - 1/2" - 13 NC x 1-1/2" - Steel Cut washers - 1/2" - Steel Lock washers - 1/2" - Steel	1 3 3 3
7	Connecting Rod	2	Bar 7/8"φ x 19-1/2" CRS Bar 2" x 3/8" x 6" CRS Set screw - hollow head - No. 10-32 NF x 3/8" Steel Jam nut - 7/8" - 9 NC - Steel	1 1 2 1
8	Push Bar	1	Std. 1" Black Steel Pipe x 46"	1
9	Compensator Bar	3	Bar 1-1/4"φ x 46" CRS Cap screw - 3/4" - 16 NF x 1-1/2" - Steel	1 2
10	Auxiliary Shaft	1	Bar 1-9/16"φ x 19-5/8" CRS	1

<u>Part No.</u>	<u>No. Required</u>	<u>Description</u>	<u>Manufacturer and Part No.</u>	
11	1	RH Aux. Shaft Box	Draper	L69369
12	1	LH " " "	"	L69370
	2	Lincoln fitting, 1/8" Pipe Thread, 67-1/2°		L65546
13	2	Dobby Crank, 1/2" x 7/8" Set Screw	"	L47381
	2	3/8" - 24 NF x 4-1/2" Hex Head Cap Screws		
14	2	Bottom Swivel, Complete	Crompton & Knowles	185145
	2	Bottom Rod Head	"	165293
	2	Pin	"	11376
15	1	Idle Gear Bracket, Complete	Draper	L70523
16	1	Idle Gear Stud	"	L70524
	1	Idle Gear Stud Ring	"	L67375
17	1	Idle Gear	"	L67293
	1	Lincoln Fitting (1/8" Pipe Thd. 67-1/2°)	"	L65546
18	1	Harness Change Gear, Complete	"	L21147
19	1	Aux. Shaft Gear	"	L67290
20	1	RH Cam Shaft Center Box Bracket	"	L69205
21	1	LH Cam Shaft Center Box Bracket	"	L67026